AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application.

Please amend claims 1, 2, 4, 6 – 12, 16, 17, 28, and 30 – 32; cancel claims 3 and 15; and add new claims 33 – 39, as follows:

1 (Currently Amended). An apparatus for frequency control, the apparatus comprising:

a reference resonator comprising an inductor and a capacitor, the reference resonator ~~adapted~~ to provide a first signal having a resonant frequency;

a negative transconductance ~~an~~ amplifier coupled to the reference resonator; and

a frequency controller coupled to the ~~amplifier and coupled to the reference resonator, the frequency controller adapted to modify~~ reference resonator to maintain the resonant frequency substantially constant in response to a variation of a parameter. ~~of the reference resonator in response to at least one variable of a plurality of variables.~~

2 (Currently Amended). The apparatus of claim 1, wherein the parameter comprises at least one of the following parameters: ~~plurality of variables comprise~~ temperature, fabrication process, voltage, or ~~and~~ frequency.

3 (Cancelled).

4 (Currently Amended). The apparatus of claim 1, ~~claim 3,~~ wherein the frequency controller further is ~~is further adapted~~ to modify a current through the negative transconductance amplifier in response to temperature variation.

5 (Original). The apparatus of claim 4, wherein the frequency controller further comprises a current source responsive to temperature.

6 (Currently Amended). The apparatus of claim 5, wherein the current source comprises at least one CTAT, PTAT, or $PTAT^2$ configuration. ~~has one or more configurations selected from a plurality of configurations, the plurality of configurations comprising CTAT, PTAT, and $PTAT^2$ configurations.~~

7 (Currently Amended). The apparatus of claim 1, ~~claim 3,~~ wherein the frequency controller further is ~~is further adapted~~ to modify a current through the negative transconductance amplifier to select the resonant frequency.

8 (Currently Amended). The apparatus of claim 1, ~~claim 3,~~ wherein the frequency controller further is ~~is further adapted~~ to modify a transconductance of the negative transconductance amplifier to select the resonant frequency.

9 (Currently Amended). The apparatus of claim 3, wherein the frequency controller further is ~~is further adapted~~ to modify a current through the negative transconductance amplifier in response to a voltage variation.

10 (Currently Amended). The apparatus of claim 3, wherein the frequency controller further is ~~is further adapted~~ to modify a transconductance of the negative transconductance amplifier in response to fabrication process variation.

11 (Currently Amended). The apparatus of claim 3, wherein the frequency controller further is ~~is further adapted~~ to modify a current through the negative transconductance amplifier in response to fabrication process variation.

12 (Currently Amended). The apparatus of claim 1, wherein the frequency controller further comprises a voltage isolator coupled to the reference resonator ~~and adapted~~ to substantially isolate the reference resonator from a voltage variation.

13 (Original). The apparatus of claim 12, wherein the voltage isolator comprises a current mirror.

14 (Original). The apparatus of claim 13, wherein the current mirror has a cascode configuration.

15 (Cancelled).

16 (Currently Amended). An apparatus, comprising:

a reference resonator comprising an inductor and a capacitor, the reference resonator ~~adapted~~ to provide a first signal having a resonant frequency;

a negative transconductance amplifier coupled to the reference resonator; and

a temperature compensator coupled to the ~~negative transconductance amplifier and to the~~ reference resonator, the temperature compensator ~~adapted to modify~~ to maintain the resonant frequency substantially constant in response to a temperature variation.

17 (Currently Amended). The apparatus of claim 16, wherein the temperature compensator further is ~~is further adapted~~ to modify a current through the negative transconductance amplifier in response to the temperature variation.

18 (Original). The apparatus of claim 17, wherein the temperature compensator further comprises a current source responsive to temperature.

19 (Original). The apparatus of claim 18, wherein the current source further comprises:

a first transistor;

a second transistor coupled to the first transistor;

a diode coupled to the first transistor; and

a resistor coupled to the second transistor.

20 (Original). The apparatus of claim 19, wherein the current provided by the current source is a function of a voltage across the diode and a resistance of the resistor, wherein the voltage and the resistance are temperature-dependent.

21 (Original). The apparatus of claim 19, wherein the first and second transistors are operable in strong inversion.

22 (Original). The apparatus of claim 18, wherein the current source further comprises:
a first transistor;
a second transistor coupled to the first transistor; and
a resistor coupled to the second transistor.

23 (Original). The apparatus of claim 22, wherein the current provided by the current source is a function of a voltage across the resistor, a resistance of the resistor, and respective sizes of the first and second transistor, wherein the voltage and the resistance are temperature-dependent.

24 (Original). The apparatus of claim 22, wherein the first and second transistors are operable at a subthreshold voltage.

25 (Original). The apparatus of claim 18, wherein the current source further comprises:
a plurality of transistors; and
a resistor coupled to a transistor of the plurality of transistors.

26 (Original). The apparatus of claim 25, wherein the current provided by the current source is a function of a square of a voltage across the resistor, wherein the voltage is temperature-dependent.

27 (Original). The apparatus of claim 25, wherein a first set of transistors of the plurality of transistors are operable in strong inversion and a second set of transistors of the plurality of transistors are operable at a subthreshold voltage.

28 (Currently Amended). The apparatus of claim 18, wherein the current source comprises at least one CTAT, PTAT, or $PTAT^2$ configuration. ~~has one or more configurations selected from a plurality of configurations, the plurality of configurations comprising CTAT, PTAT, and $PTAT^2$ configurations.~~

29 (Original). The apparatus of claim 18, wherein the current source is coupled though one or more current mirrors to the negative transconductance amplifier.

30 (Currently Amended). An apparatus, comprising:

a reference resonator comprising an inductor and a capacitor, the reference resonator ~~adapted~~ to provide a first signal having a resonant frequency;

a negative transconductance amplifier coupled to the reference resonator;

a current mirror coupled to the negative transconductance amplifier; and

a current source coupled to the current mirror, the current source to maintain ~~adapted to modify~~ the resonant frequency substantially constant ~~of the reference resonator~~ by varying a current in response to a temperature variation. ~~through the current mirror and the negative transconductance amplifier in response to temperature.~~

31 (Currently Amended). The apparatus of claim 30, wherein the current source has at least one CTAT, PTAT, or $PTAT^2$ configuration. ~~one or more configurations selected from a plurality of configurations, the plurality of configurations comprising CTAT, PTAT, and $PTAT^2$ configurations.~~

32 (Currently Amended). The apparatus of claim 31, further comprising a plurality of current sources coupled to the current mirror, the plurality of current sources comprising at least two CTAT, PTAT, or $PTAT^2$ configurations. ~~a plurality of current sources having at least two configurations selected from a plurality of configurations, the plurality of configurations comprising CTAT, PTAT, and $PTAT^2$ configurations.~~

33 (New). The apparatus of claim 1, wherein the capacitor is a variable capacitor responsive to a control voltage to modify the reactance of the reference resonator.

34 (New). The apparatus of claim 33, wherein the frequency controller further is to generate the control voltage in response to the variation of the parameter.

35 (New). The apparatus of claim 34, further comprising:

a coefficient register coupled to the frequency controller, the coefficient register to store a plurality of coefficients, the plurality of coefficients calibrated over the variation of the parameter and provided to the frequency controller to generate a corresponding control voltage.

36 (New). The apparatus of claim 16, wherein the capacitor is a variable capacitor responsive to a control voltage to modify the reactance of the reference resonator.

37 (New). The apparatus of claim 36, wherein the temperature compensator further is to generate the control voltage in response to the temperature variation.

38 (New). The apparatus of claim 37, further comprising:

a coefficient register coupled to the temperature compensator, the coefficient register to store a plurality of coefficients, the plurality of coefficients calibrated over the temperature variation and provided to the temperature compensator to generate a corresponding control voltage.

39 (New). The apparatus of claim 16, wherein the temperature compensator is coupled to the reference resonator through the negative transconductance amplifier.